REMARKS

Claim Rejections Under 35 U.S.C. § 103

In the Office Action dated November 1, 2005, the Examiner rejected claims 1-5, 7, and 8 under 35 U.S.C. § 103(a) as being unpatentable over Diehl et al. (US 5,623,015) and unpatentable over Raynolds et al. (US 5,919,716). Further in the Office Action dated February 8, 2005, the Examiner rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Raynolds et al. (US 5,919,716) in view of Pickelman et al. (US 4,582,663).

Claims 1-5 and 7-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,623,015 issued to Diehl et al.

The rejection of claims 1-5 and 7-8 is respectfully traversed on the basis that Diehl et al. does not teach, disclose, or even suggest Applicants' sheet of material having an admicellar hydrophobic polymer coating or Applicants' disclosed and claimed methodology for providing such a sheet of material. In fact, Diehl et al. specifically does not disclose each and every element recited in Applicants' independent claim, and thus, each of the claims which depend therefrom.

Applicants inventive concept, as recited in a claim 1, resides in a sheet of material coated with an admicellar aqueous hydrophobic coating composition formed by an admicellar polymerization reaction. The admicellar polymerization reaction takes place on at least one of the first and second

surfaces of the sheet of material. The aqueous hydrophobic coating composition is placed on at least one of the first and second surfaces of the sheet of material and thereafter an initiator is added to the composition. After a predetermined period of time, an admicellar hydrophobic polymer coating forms on at least one of the first and second surfaces of the sheet of material to provide a sheet of material having an admicellar hydrophobic polymer coating thereon.

In contrast, there is no specific or inherent teaching/suggestion in Diehl et al. of a method for forming an admicellar hydrophobic polymer coating on at least one of a first and second surface of a sheet of material. Diehl et al. does not teach, disclose, or even suggest Applicants method of utilizing admicellar polymerization for coating a surface of the sheet of material. Rather, the Diehl et al. reference teaches the use of a latex binder composition utilized on nonwoven cellulosic based substrates to impart high wet tensile strength. The Diehl et al. reference, therefore, teaches the method of forming a polymer in solution and thereafter applying it to the fabric. Such a technique results in the polymer filing in the voids between the threads of the fabric as well as encasing the threads (i.e. a binder composition). Such an encasement of the threads results in a stiff and inflexible piece of material -- a property that does not occur utilizing the Applicants' claimed methodology. Thus, Diehl et al. teaches away from Applicants' presently claimed invention.

By definition, a binder (such as that disclosed by the Diehl et al. reference) imparts mechanical strength and increases structural integrity by bonding together separate filaments and fibers of a substrate. To achieve this, the binder must (1) bridge between elements, (2) must contact and/or envelope the elements, and (3) generally fill in interstitial voids between the elements in order to make an integrated material.

The Applicant's admicellarly coated substrate having a hydrohobic polymer thereon are chemically as well as physically different than the binder composition disclosed and taught by the Diehl et al. reference. Admicellar polymerization does not have discreet spherical particles forming the film. Thus, it coats each individual fiber only and does not bridge between the individual fibers. On a cotton fabric, for example, such a treatment yields a cylindrical shell around the cellulose fiber. Additionally, the use of admicellar polymerization results in a smaller amount of the coating material being used in the Applicant's presently claimed invention. The coated fibers retain substantially the same permeability as the uncoated material, which is in direct opposition to the teachings of the Diehl et al. reference. The permeability of the coated materials in Diehl et al. decreases because of the way the binder bridges the fibrous elements and fills in the interstitial voids thereby creating an integrated material that is substantially impermeable.

The Diehl et al. reference teaches that the latex binder composition is

generally formed by emulsion polymerization to attain relatively high concentrations in a liquid phase for the purpose of binding. The liquid formulation involves the preparation of dispersions, meaning fairly high concentrations of such compounds in aqueous media. Thus, the polymer coating disclosed in the Diehl et al. reference is formed in solution and then applied to the material.

This is in opposition to Applicants claimed use of admicellar polymerization. The nature of admicellar polymerization is not to create formulations that lead to dispersions that are rich in polymer or that will deposit thick three-dimensional macroscopic layers. "Dispersions" is a special teaching to the use of concentrated polymer that is present in a bulk solution directly contrasting to the admicellar polymerization of Applicants' presently claimed invention. The final product of presently claimed admicellar polymerization does not yield a polymer mixture that bridges or fills the voids between the fibers in a three-dimensional network.

Applicants' presently claimed invention, as recited in amended claim 1, is an admicellar polymer coating composition, <u>not a binder composition</u>. The presently claimed admicellar hydrophobic polymer coating forms only on the surface of the sheet of material not throughout the voids and interstitial spaces of the sheet of material. If the process disclosed in the Diehl et al. reference was used, the advantageous physical properties of the presently claimed

admicellar polymer coating would be lost. Further, the binder taught by the Diehl et al. reference renders the substrate substantially stiffer and significantly more inflexible than the Applicants' presently claimed admicellar coating composition applied to a substrate. Complete filling of the voids found in the substrate material, as taught by the Diehl et al. reference, decreases the air permeability of the substrate material. This is directly opposite to Applicants' admicellar polymerization process which maintains the air permeability of the substrate material.

Therefore, Applicants respectfully submit that the claims are not obvious in view of the Diehl et al. reference and request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of the claims as being unpatentable over Diehl et al., and that the claims be expediently passed to issuance.

The rejection of claims 1-5 and 7-8 is respectfully traversed on the basis that the Raynolds et al. reference does not teach, disclose, or even suggest Applicants' claimed invention involving an admicellar hydrophobic polymer coating composition and method of making and using.

Applicants inventive concept is set forth in particular with respect to the arguments made against the Diehl et al. reference. The Raynolds et al. reference does not disclose, teach, or even suggest such a sheet of material having an admicellar hydrophobic polymer coating thereon. Rather, the Raynolds et al. reference teaches a polymer composition utilized for

backcoating woven substrates and as a binder composition for non-woven substrates -- i.e. the same type of "binder" coating composition as discussed by the Diehl et al. reference.

The Applicant's admicellarly coated substrate having a hydrohobic polymer thereon are chemically as well as physically different than the backcoating disclosed and taught by the Raynolds et al. reference. Admicellar polymerization does not have discreet spherical particles forming the film. Thus, it coats each individual fiber only and does not bridge between the individual fibers. On a cotton fabric, for example, such a treatment yields a cylindrical shell around the cellulose fiber. Additionally, the use of admicellar polymerization results in a smaller amount of the coating material being used in the Applicant's presently claimed invention. The coated fibers retain substantially the same permeability as the uncoated material, which is in direct opposition to the teachings of the Raynolds et al. reference. The permeability of the coated materials in Raynolds et al. decreases because of the way the binder bridges the fibrous elements and fills in the interstitial voids thereby creating an integrated material that is substantially impermeable.

The Raynolds et al. reference, in particular, teaches that a polymer composition is formed by dispersion polymerization. Dispersion polymerization refers to a suspension or emulsion polymerization that must attain relatively high concentrations of polymer in a liquid phase for the purpose of binding to

and encapsulating the substrate. The composition taught by the Raynolds et al. reference is a bulk solution that contains a large amount of polymer in order to provide a three dimensional incorporation of the binder into the final composite material or substrate. The liquid formulation disclosed in the Raynolds et al. reference involves the preparation of one or more dispersions, -- i.e. a mixture containing a fairly high concentration of polymers that are suspended in the aqueous media before the mixture is applied to the substrate.

As discussed hereinabove, the Applicants' presently claimed invention is a sheet of material having a coating composition formed by admicellar polymerization thereon. Admicellar polymerization does not create a formulation that would be classified as a dispersion -- i.e. one that is rich or contains a high concentration of polymer. Furthermore, Applicants' coating composition does not deposit a thick three-dimensional macroscopic layer as does the coating composition disclosed by the Raynolds et al. reference. The presently claimed coating composition does not contain polymers that bridge between the fibers in the three-dimensional network of the substrate so as to promote binding. Rather, the presently claimed coating composition forms a polymer layer only on the surface of the fibers and filaments of the sheet of material and not in the interstitial voids of the sheet of material as taught by Raynolds et al.

Therefore, Applicants respectfully submit that claims 1-5 and 7-8 are not

obvious in view of the Raynolds et al. reference and request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of the claims as being unpatentable over Raynolds et al., and that the claims be expediently passed to issuance.

Claims 6 is not obvious over Raynolds et al. in view of Pickelman et al. That is, claim 6 depends from claim 1. As discussed above, claim 6 is clearly patentable over Raynolds et al. For this reason alone, it is respectfully submitted that claim 6 is patentable over Raynolds et al. in view of Pickelman et al.

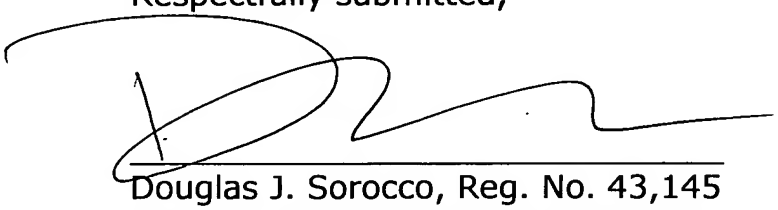
Therefore, Applicants respectfully submit that claim 6 is not obvious in view of the Raynolds et al. reference in view of the Pickelman et al. reference and request reconsideration and withdrawal of the 35 U.S.C. § 103(a) rejection of the claims as being unpatentable over Raynolds et al. in view of Pickelman et al., and that the claims be expediently passed to issuance.

Conclusion

It is respectfully submitted that this application is in condition for allowance for the reasons stated above. Therefore, it is requested that the Examiner reconsider each and every rejection as applicable to the claims now pending in the application and pass such claims to issue.

This amendment is intended to be a complete response to the Office Action dated November 1, 2005. In the event that any outstanding issues remain that would delay the allowance of this application, the examiner is urged to contact the undersigned to ***telephonically*** discuss such outstanding issues.

Respectfully submitted,



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